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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/694,870	10/24/2000	Dan M. Griffin	907.0009USU	2361

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EXAMINER

MATTIS, JASON E

ART UNIT	PAPER NUMBER
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2665

3

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/694,870

Applicant(s)

GRIFFIN ET AL.

Examiner

Jason E Mattis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-16 is/are allowed.
- 6) ☒ Claim(s) 1,3-7 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 2 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Oath/Declaration

1. It does not identify the mailing address of each inventor. A mailing address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing address should include the ZIP Code designation. The mailing address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

Mailing addresses need to be supplied for the following inventors:

Samuel C. Kingston
Delon K. Jones
Randal R. Sylvester

2. It does not identify the citizenship of each inventor.

Citizenship information needs to be supplied for the following inventors:

Samuel C. Kingston
Delon K. Jones
Randal R. Sylvester

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the specification is over 150 words. A new abstract needs to be submitted.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 line 1 and claim 4 line 3 both contain the limitation "the carrier". Claim 1, which claims 3 and 4 depend on, has both the limitation "receiving a first carrier" and the limitation "transmitting a second carrier signal". Claims 3 and 4 are indefinite because it is not clear if the limitation "the carrier" refers to "a first carrier" or "a second carrier" or both the first and second carriers.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, 5, 6, 7, 9, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ariyoshi et al. (U.S. Pat. 5930244).

With respect to claim 1, Ariyoshi et al. discloses receiving a first carrier, signal, during a receive period (**See column 6 lines 31-33 and Figure 3 of Ariyoshi et al. for reference to a signal being received at an antenna 301**). Ariyoshi et al. also

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discloses deriving a receiver tracking signal, a phase synchronization control instruction, that is indicative of a frequency shift between the received first carrier and a reference signal **(See column 6 lines 51-65 and Figure 3 of Ariyoshi for reference to separating a phase synchronization control instruction from a received signal).**

Ariyoshi et al. further discloses shifting a receiver base band signal by an amount and in a direction indicated by the receiver tracking signal **(See column 7 lines 11-24 of Ariyoshi et al. for reference to acquiring phase synchronization by using a phase updating instruction, which adjusts, or shifts, the phase of the received signal).**

Ariyoshi et al. also discloses, during a next transmission period, shifting a transmitter base band signal by an amount indicated by the receiver tracking signal during the receive period, and in a direction opposite to the direction indicated by the receiver tracking signal during the receive period **(See column 6 lines 51-65 of Ariyoshi et al. for reference to using the phase synchronization control instruction to adjust the phase of the next transmission, which inherently must be adjusted in the opposite direction that the received data is adjusted in to correctly synchronize the transmission signal).** Ariyoshi et al. further discloses transmitting a second carrier signal, a signal on a transmission frequency, which is modulated in accordance with the shifted transmitter base band signal **(See column 7 lines 25-44 of Ariyoshi et al. for reference to transmitting a signal, which has had its phase adjusted as indicated by the phase synchronization control instruction, using antenna 301).**

With respect to claim 3, Ariyoshi et al. discloses that the carrier, signal, conveys a CDMA communication signal **(See the abstract of Ariyoshi et al. for reference to**

the synchronization method of Ariyoshi et al. being performed in CDMA communications).

With respect to claim 5, Ariyoshi et al. discloses storing the receiver tracking signal, the phase synchronization control instruction, for use during the next transmission period (See column 6 lines 51-65 and Figure 3 of Ariyoshi et al. for reference to the phase synchronization control instruction being input to a transmission phase controller 315, and for reference to transmission phase controller using the phase synchronization control instruction to adjust the transmission phase).

With respect to claim 6, Ariyoshi et al. discloses shifting the transmitter base band signal functions to pre-compensate the transmitted second carrier signal so as to reduce carrier acquisition time at a receiver of the transmitted second carrier signal (See column 6 lines 51-65 and Figure 3 of Ariyoshi et al. for reference to adjusting the transmitter phase to pre-compensate the transmitted signal, which inherently will reduce acquisition time at a receiver of the second transmitted signal because the transmitted signal will be in synchronization with the base station clock).

With respect to claim 7, Ariyoshi et al. discloses a receiver base band subsystem, and a transmitter base band subsystem (See column 6 lines 31-50, column 7 lines 25-44 and Figures 3 and 4 of Ariyoshi et al. for reference to a terminal station 402 having receiver circuitry and transmitter circuitry). Ariyoshi et al. also discloses a receiver comprising circuitry that is operable during a receive period

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for receiving a carrier (**See column 6 lines 31-50 and Figure 3 of Ariyoshi et al. for reference to receiving a signal at an antenna 301 and inputting the signal to radio frequency circuit 303**). Ariyoshi et al. further discloses that the circuitry derives a receiver tracking signal, a phase synchronization control instruction, that is indicative of a frequency and phase shift between the received carrier and a reference signal (**See column 6 lines 51-65 of Ariyoshi et al. for reference to separating from a signal a phase synchronization control instruction, which represents a phase difference between the signal and a reference signal**). Ariyoshi et al. also discloses circuitry for rotating the frequency and phase of a receiver base band signal by an amount and in a direction indicated by the receiver tracking signal (**See column 6 line 66 to column 7 line 10 and Figure 3 of Ariyoshi et al. for reference to synchronization acquisition, which includes rotating the frequency and phase of a signal, being performed by an acquisition circuit 314 and a delay lock loop circuit 310**). Ariyoshi et al. further discloses a transmitter comprising circuitry that is operable during a next transmission period for generating a frequency for a transmitter base band signal that is shifted by an amount indicated by the receiver tracking signal and in a direction opposite to the direction indicated by the receiver tracking signal (**See column 7 lines 35-46 and Figure 3 of Ariyoshi et al. for reference to transmission circuitry, which adjusts the phases of data to be transmitted based on the phase synchronization control signal, and which inherently must adjust the phase in the opposite direction of the phase adjusted for the received signal to correctly obtain synchronization of the transmitted signal**).

With respect to claim 9, Ariyoshi et al. discloses that the carrier, signal, conveys a CDMA communication signal (**See the abstract of Ariyoshi et al. for reference to the synchronization method of Ariyoshi et al. being performed in CDMA communications**).

With respect to claim 11, Ariyoshi et al. discloses a sample and hold means for storing the receiver tracking signal, the phase synchronization control instruction, for use during the next transmission period (**See column 6 lines 51-65 and Figure 3 of Ariyoshi et al. for reference to the phase synchronization control instruction being input to a transmission phase controller 315, and for reference to transmission phase controller using the phase synchronization control instruction to adjust the transmission phase**).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ariyoshi et al. in view of Sezgin et al. (U.S. Application 10/074949).

With respect to claims 4 and 10, Ariyoshi et al. discloses Customer Premises Equipment, terminal stations 402, and the carrier being received from an Access Point, base station 401 (**See column 3 lines 62-65 and items 401 and 402 in Figure 10 of**

Ariyoshi et al. for reference to base stations 401 and terminal stations 402).

Ariyoshi et al. does not disclose that the communications system is time division duplexed.

Sezgin et al., in the field of communications, discloses a system and method for signal synchronization of a time division duplexed CDMA system (**See page 1 paragraph 2 of Sezgin et al. for reference to a time division duplexed CDMA system**). Using time division duplexing has the advantage of reducing interference between the transmitters and receivers of a communications system.

It would have been obvious to one of ordinary skill in the art at the time of the invention, when presented with the work of Sezgin et al., to combine the use of time division duplexing, as suggested by Sezgin et al., with the CDMA synchronization system and method of Ariyoshi et al., with the motivation being to reduce interference between the transmitters and receivers of the system.

Allowable Subject Matter

8. Claims 12, 13, 14, 15, and 16 are allowed.

9. Claim 12 is allowable over the prior art of record since the cited references taken individually or in combination fail to particularly disclose **multiplexing circuitry for sharing said digital phase shifter between said receiver base band subsystem and said transmitter base band subsystem**. It is noted that the closest prior art, Ariyoshi et al., discloses a synchronization system for, in a terminal station, synchronizing the phase of a received signal and the phase of a transmitting signal, for

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transmitting to a base station. Ariyoshi et al. fails to disclose or render obvious the above underlined limitations as claimed. Claims 13, 14, 15, and 16 are allowable because they depend on allowable claim 12.

10. Claims 2 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The claims would be allowable for the same reasons as stated above.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Peyla et al. (U.S. Pat. 6539063) discloses a system and method for recovering timing offset and frequency error in an RF communications system. Cioffi et al. (U.S. Pat. 6473438) discloses a method to synchronize the transmission of data in an RF communications system. Veintimilla (U.S. Pat. 5943375) discloses a method for synchronizing a remote station to a base station.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason E Mattis whose telephone number is (703) 305-8702. The examiner can normally be reached on M-F 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (703) 305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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RICKY NGO
PRIMARY EXAMINER